



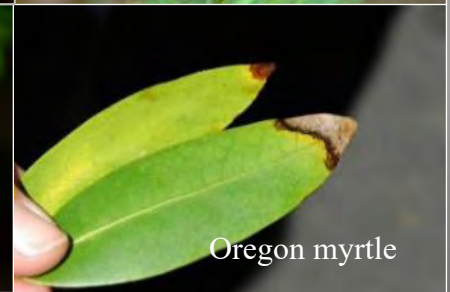
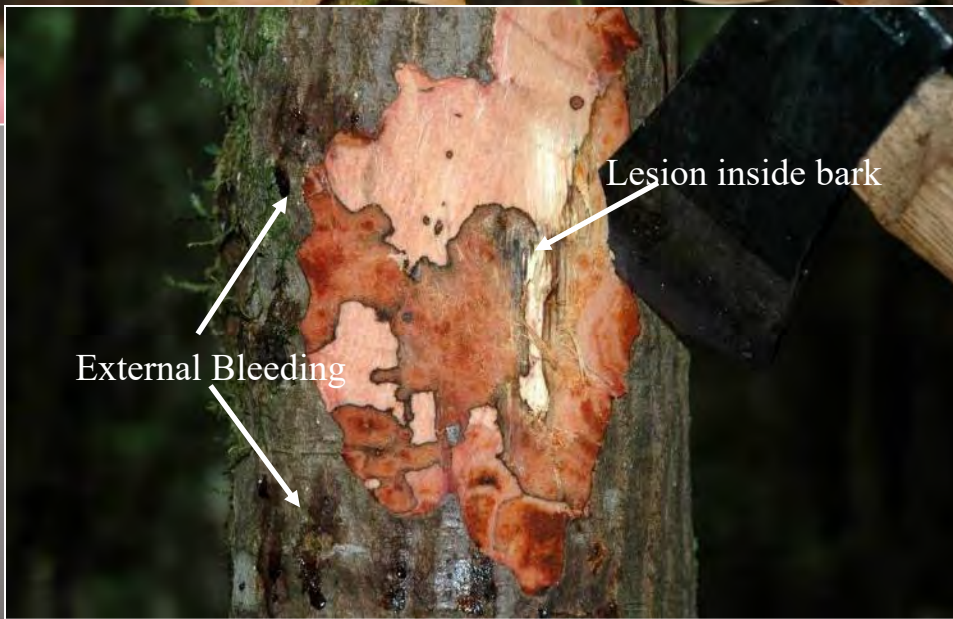
**Sudden Oak Death
Emergency Funding Request
OISC Business Meeting - Astoria
March 21, 2017**



Sudden Oak Death – *Phytophthora ramorum*



- Kills tanoak in Oregon
- Infects many other plants, including Douglas-fir
- Natural dispersal: wind-driven rain, spores
- Human-aided movement: horticulture



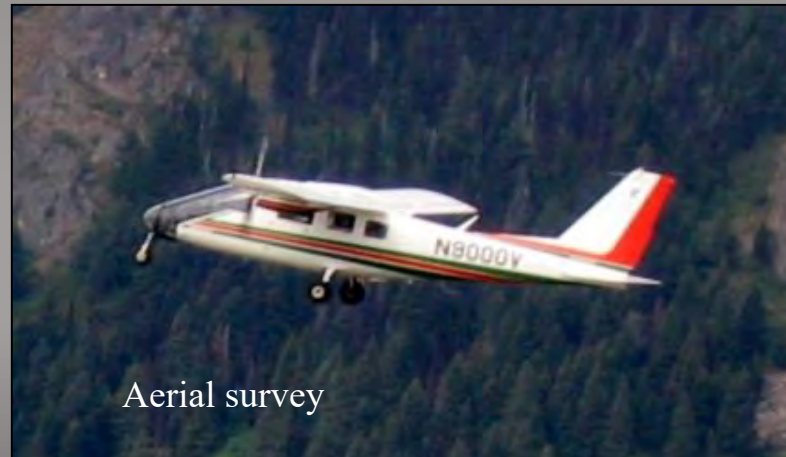
Sudden Oak Death Program in Oregon Forests



1. Survey and detection
2. Delimitation of infested sites
3. Treatment of infested sites
4. Regulation / education
5. Monitoring / research

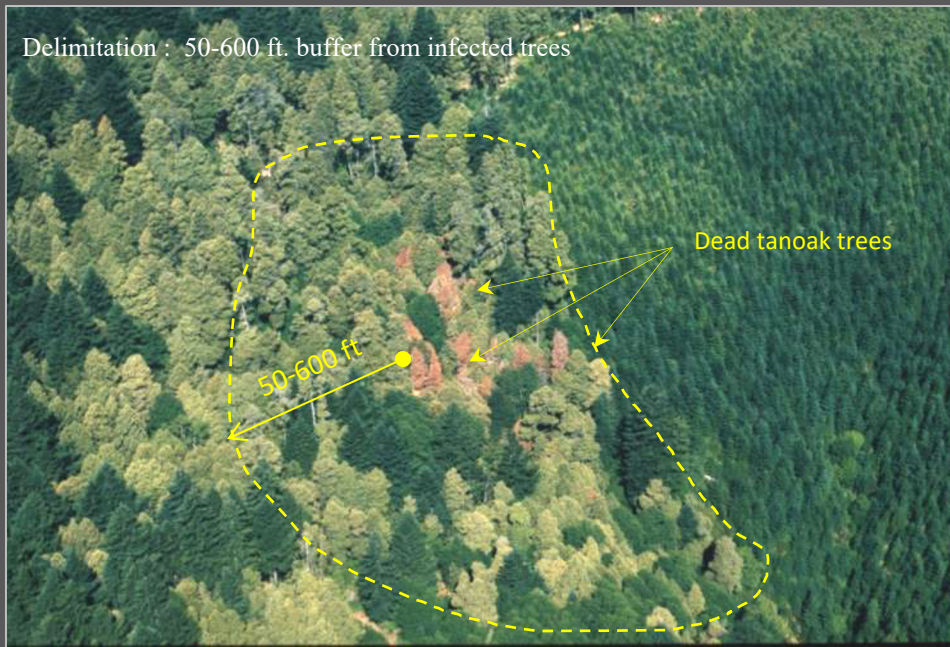


Stream baiting



Aerial survey

Delimitation : 50-600 ft. buffer from infected trees



Disease Treatment

1. Cut and burn tanoak, rhododendron, huckleberry, sometimes myrtle.
2. Larger treatment areas (300 to 600 ft buffer) most effective
3. Costs : \$3,000-\$5,000 / acre
4. No cost to private landowners where treatment is required by quarantine rule, but no compensation for loss.
5. Infestations detected early and treated with wide buffers can eliminate disease and stop spread





Danny Norlander photo

Without treatment, disease intensifies and spread increases (Curry County, July, 2015)

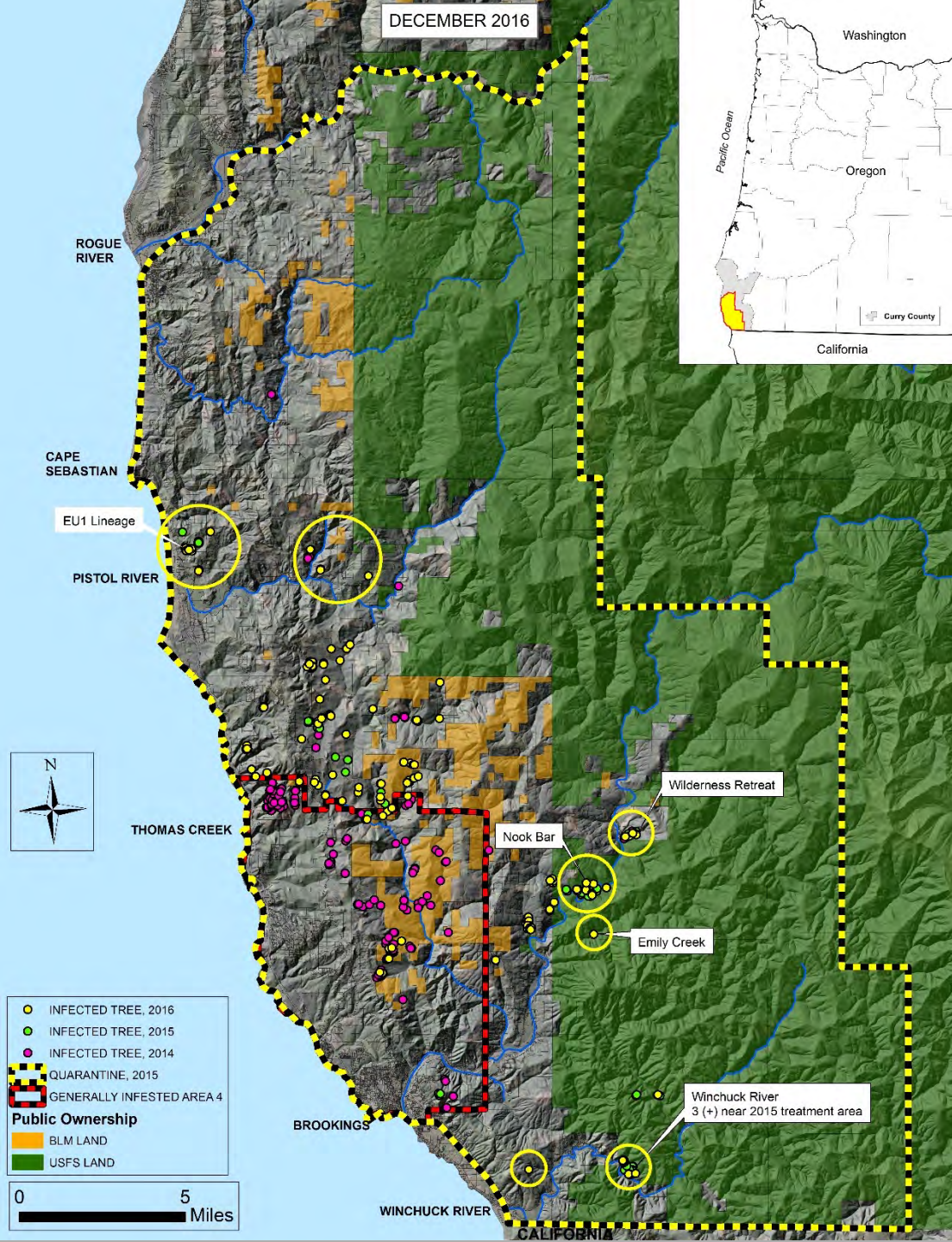
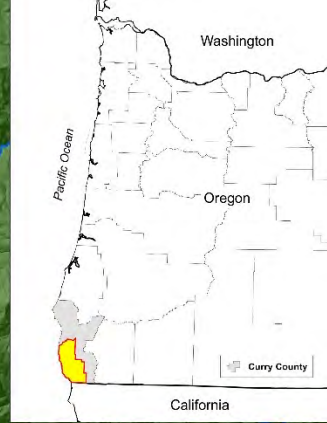
DECEMBER 2016

SUDDEN OAK DEATH

October, 2016

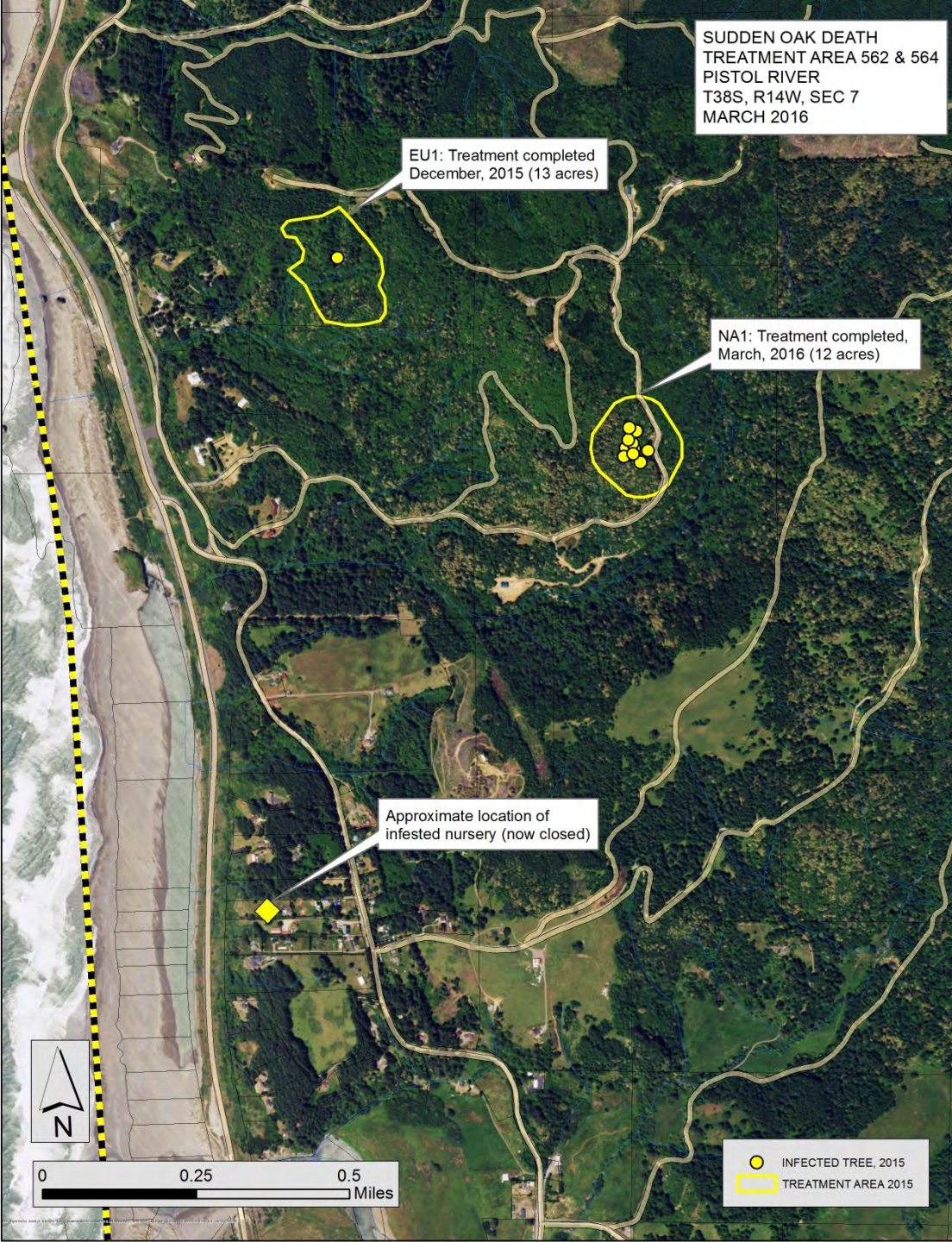
65 new sites outside the GIA in 2016;
none more distant than previous sites,
and none near the new quarantine
boundary

EU1 Lineage discovered for a second
time near Pistol River



- INFECTED TREE, 2016
 - INFECTED TREE, 2015
 - INFECTED TREE, 2014
 - ▬ QUARANTINE, 2015
 - ▬ GENERALLY INFESTED AREA 4
- Public Ownership**
- BLM LAND
 - USFS LAND

0 5 Miles



EU1 Infestation

Single tanoak infected with the EU1 clonal lineage of *P. ramorum* was found in May 2015, one mile north of a small private nursery (now closed) that had EU1-infected plants in 2012.

First report of EU1 clonal lineage in US forests

EU1 lineage damages conifers in Europe and could mate with the NA1 lineage; possibility of more damaging progeny

13 acres were cut and burned.

Two post-treatment surveys failed to find the pathogen on or near the infested site, but, the third survey detected it in one soil sample.



2016 EU1 Infestation

562

2015 NA1 TREATMENT

564

Approx. Location of
P. ramorum (+) nursery

○ INFECTED TREE 2015
TREATMENT AREA 2015

0 0.3 0.6 Kilometers





2016 EU1 Infestation

562

WA-127

2015 NA1 TREATMENT

564

WA-114

Approx. Location of
P. ramorum (+) nursery

- INFECTED TREE 2015
- STEAM_BAIT_SITES_2016
- TREATMENT AREA 2015



0 0.3 0.6 Kilometers



2016 EU1 Infestation

562

WA-127

2015 NA1 TREATMENT

564

WA-114

Approx. Location of
P. ramorum (+) nursery

- INFECTED TREE 2016
- INFECTED TREE 2015
- STEAM_BAIT_SITES_2016
- TREATMENT AREA 2015



0 0.3 0.6 Kilometers

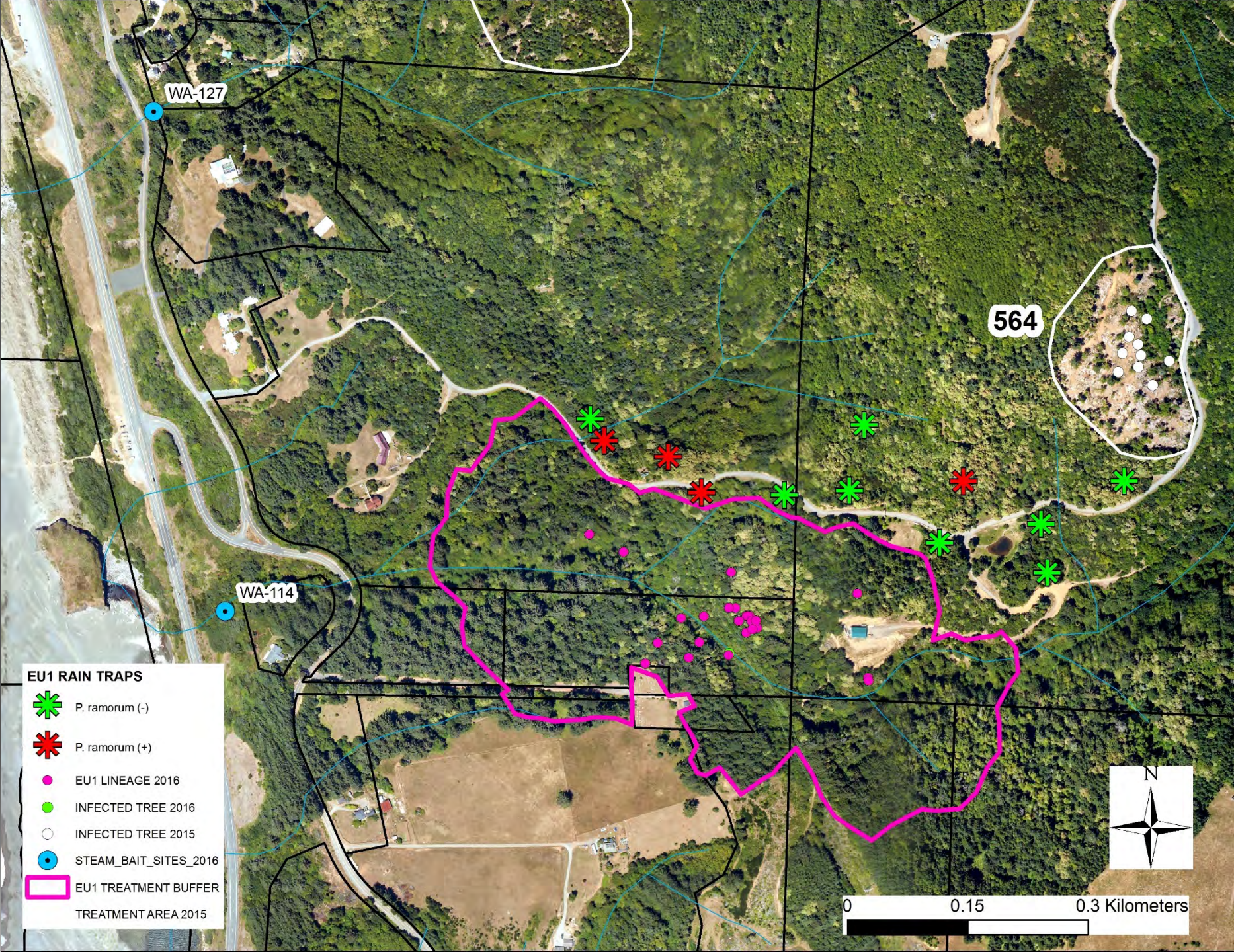


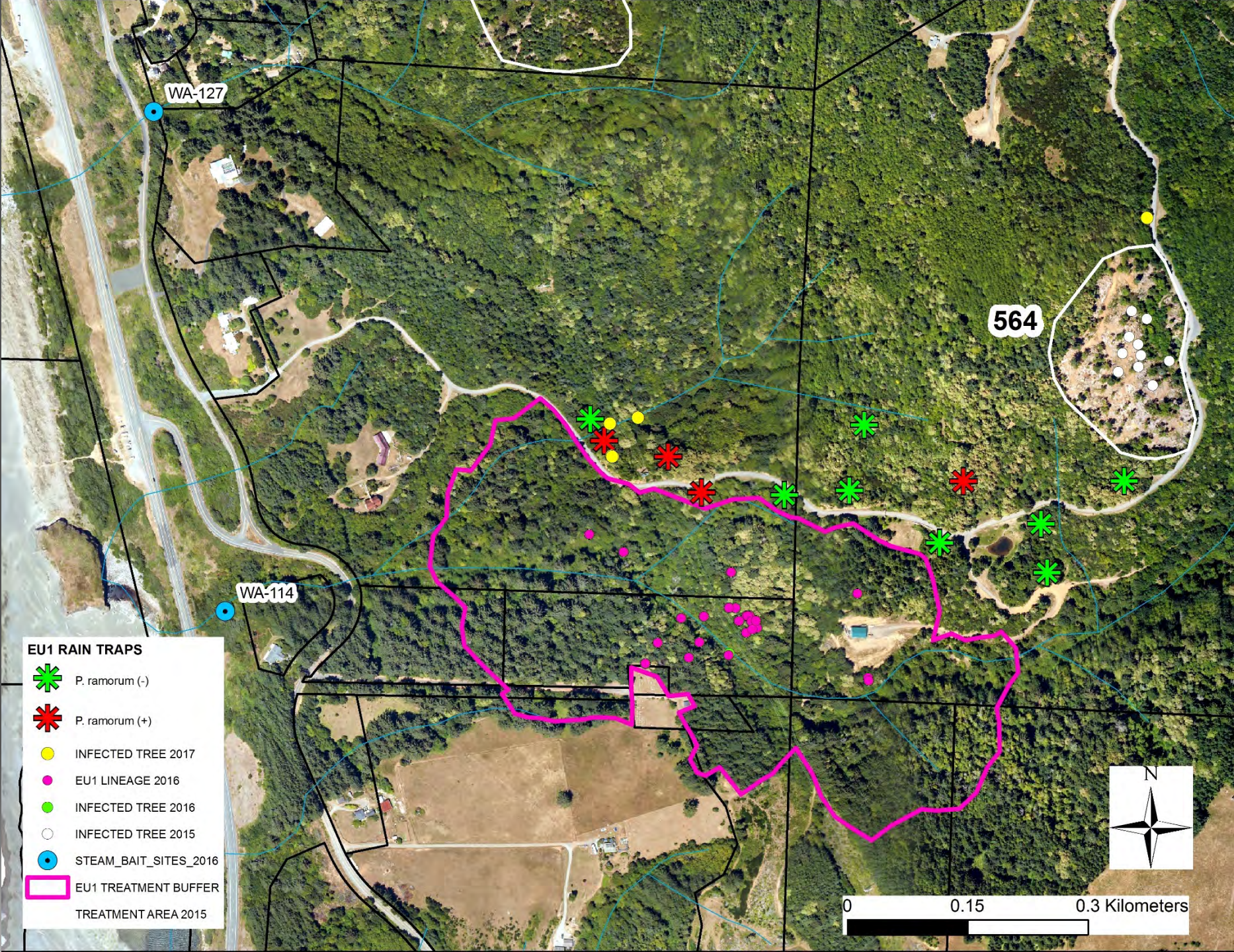
- TREATMENT AREA 2016 selection
- EU1 LINEAGE 2016
- INFECTED TREE 2016
- INFECTED TREE 2015
- STEAM_BAIT_SITES_2016
- EU1 TREATMENT BUFFER
- TREATMENT AREA 2015

Approx. Location of
P. ramorum (+) nursery









0 0.3 0.6 Kilometers

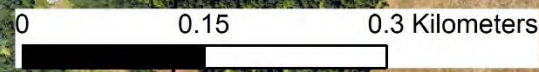
















EU1 RAIN TRAPS

-  *P. ramorum* (-)
-  *P. ramorum* (+)
-  INFECTED TREE 2017
-  EU1 LINEAGE 2016
-  INFECTED TREE 2016
-  INFECTED TREE 2015
-  STEAM_BAIT_SITES_2016
-  EU1 TREATMENT BUFFER
- TREATMENT AREA 2015



EU1 RAIN TRAPS

-  *P. ramorum* (-)
-  *P. ramorum* (+)
-  INFECTED TREE 2017
-  EU1 LINEAGE 2016
-  INFECTED TREE 2016
-  INFECTED TREE 2015
-  STEAM_BAIT_SITES_2016
-  TREATMENT AREA 2016
-  EU1 TREATMENT BUFFER
-  TREATMENT AREA 2015



0 0.3 0.6 Kilometers

SUDDEN OAK DEATH
 EU1 MCKINLEY CREEK
 T38S R14W
 SEC 7, 8, 17, 18
 23 FEBRUARY 2017

BONIFACE, JJ & LD

WESSELINK, R.

15279
 15453
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 15466
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15787

564

WA-114

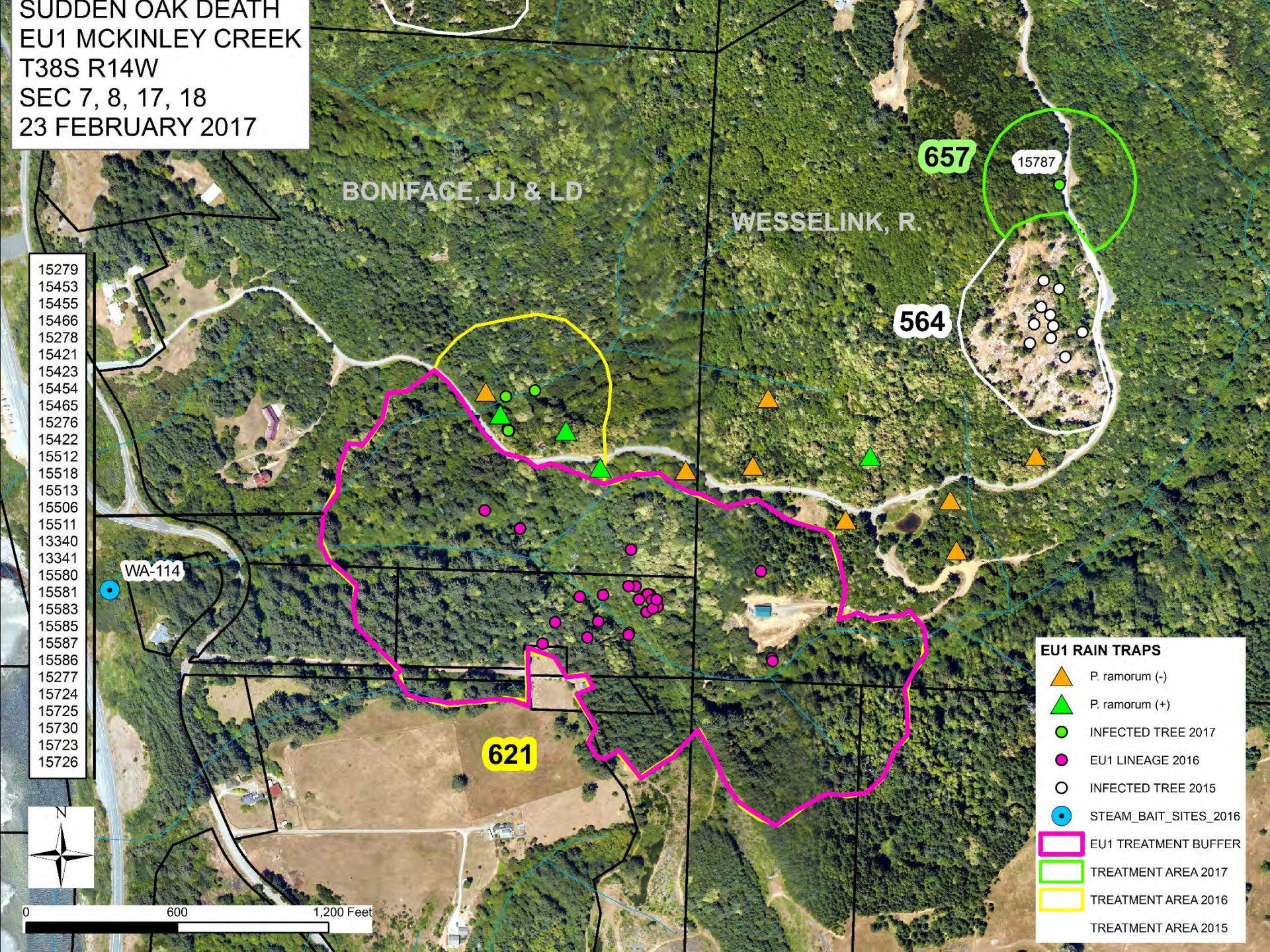
621

EU1 RAIN TRAPS

-  P. ramorum (-)
-  P. ramorum (+)
-  INFECTED TREE 2017
-  EU1 LINEAGE 2016
-  INFECTED TREE 2015
-  STEAM_BAIT_SITES_2016
-  EU1 TREATMENT BUFFER
-  TREATMENT AREA 2017
-  TREATMENT AREA 2016
-  TREATMENT AREA 2015



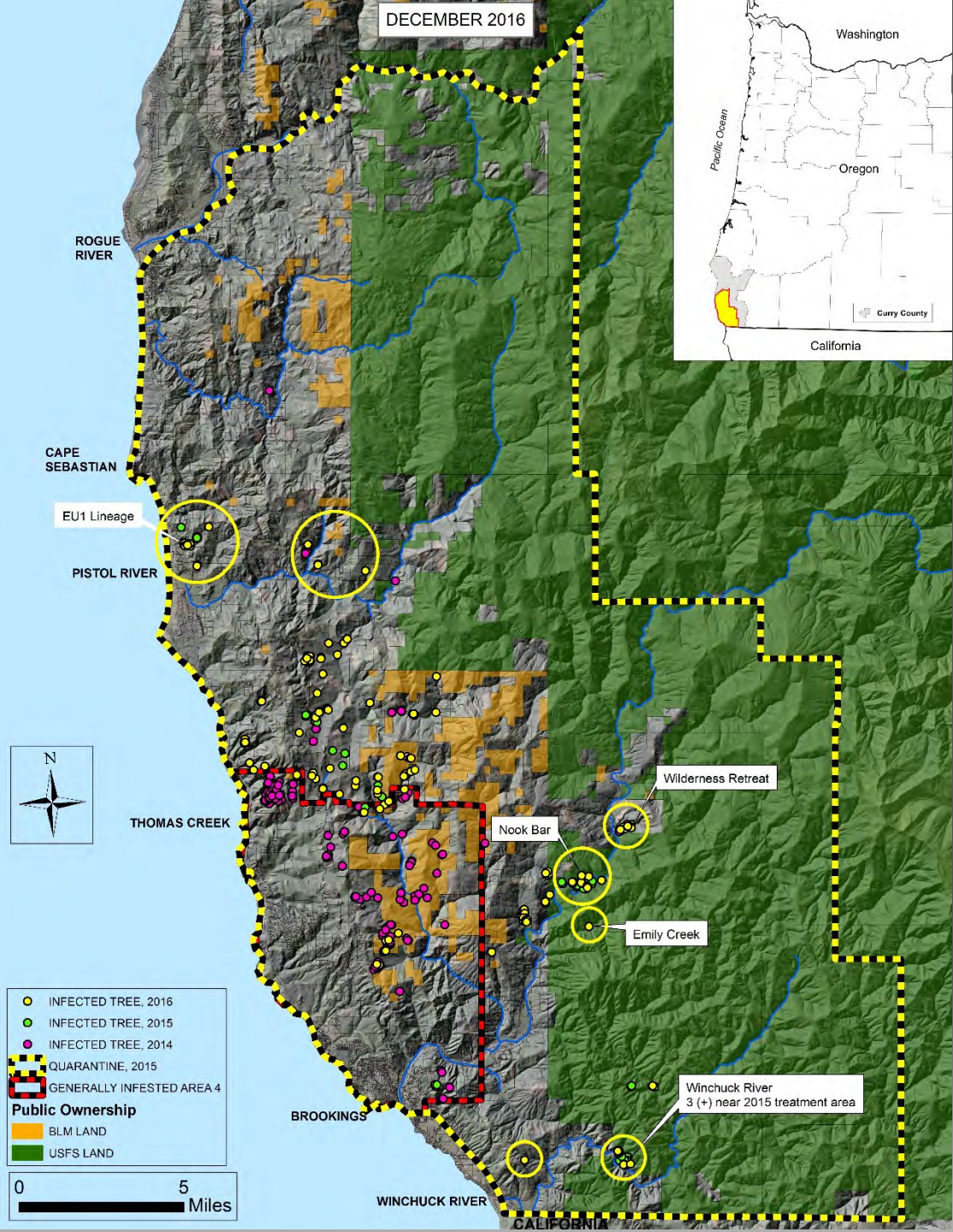
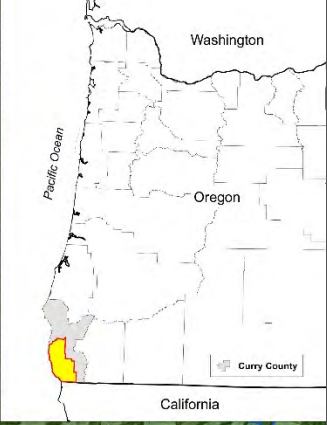
0 600 1,200 Feet



DECEMBER 2016

SUDDEN OAK DEATH March, 2017

Emergency funding
required to complete work
at EU1 site



- INFECTED TREE, 2016
 - INFECTED TREE, 2015
 - INFECTED TREE, 2014
 - ▬ QUARANTINE, 2015
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0 5 Miles



More on EU1

EU1 in the UK

Douglas-fir, western hemlock, grand fir, noble fir, Port Orford cedar occasionally found infected nearby infected larch stands.

DF between 4- 40 years observed infected with stem lesions, can girdle.

Sporulation on larch trees exceed California bay laurel (the main disease driver in CA) in studies conducted by the UK Forestry Commission.

Current EU1 Studies at OSU

Multiple studies comparing the aggressiveness of EU1 and NA1.

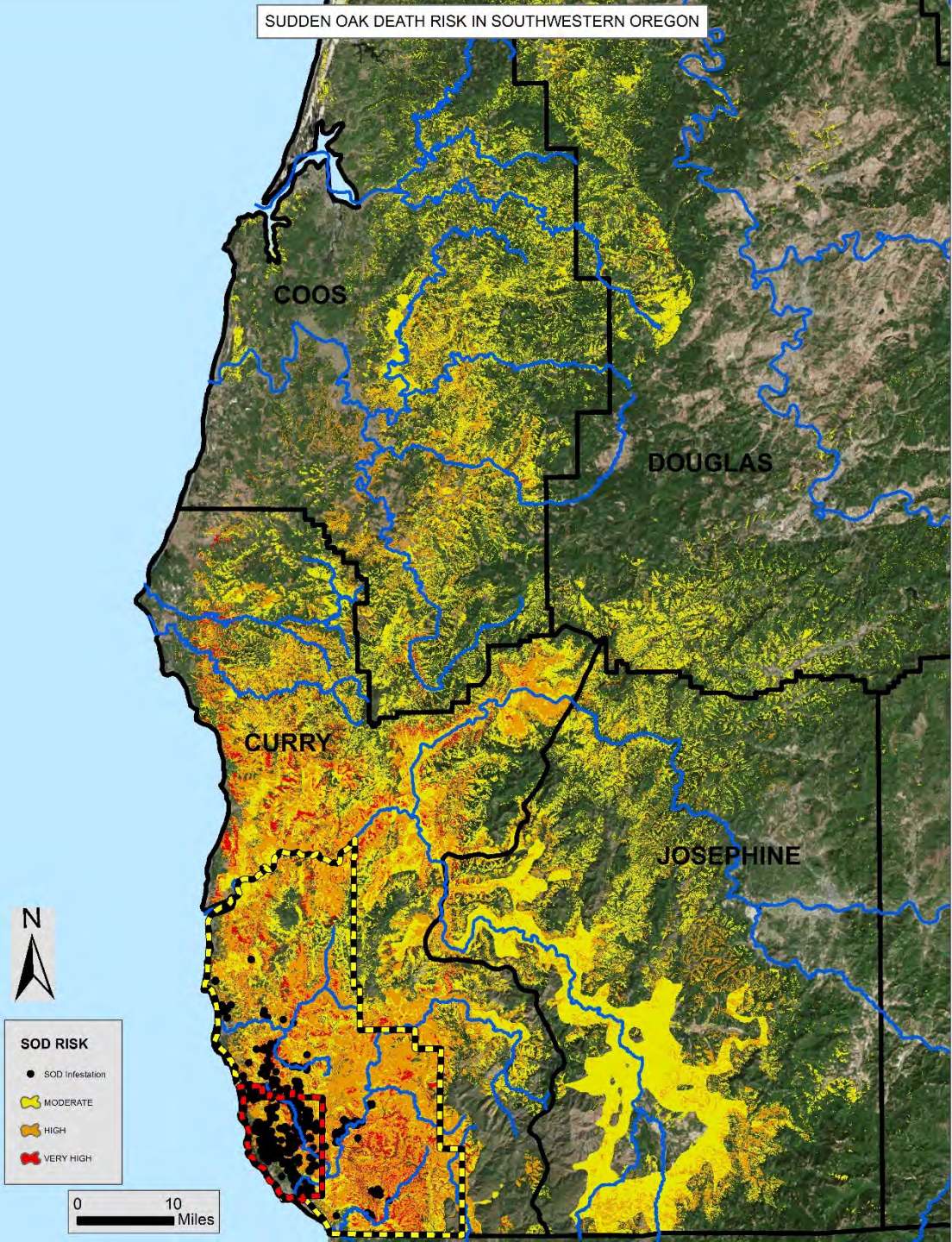
Log inoculations of DF, tanoak, Oregon white oak, western hemlock, Sitka spruce, and madrone.

Leaves and needles of those species will be measured for sporulation rates.

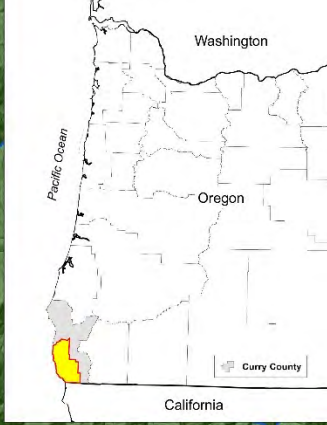
SUDDEN OAK DEATH RISK IN SOUTHWESTERN OREGON

FUTURE NEEDS

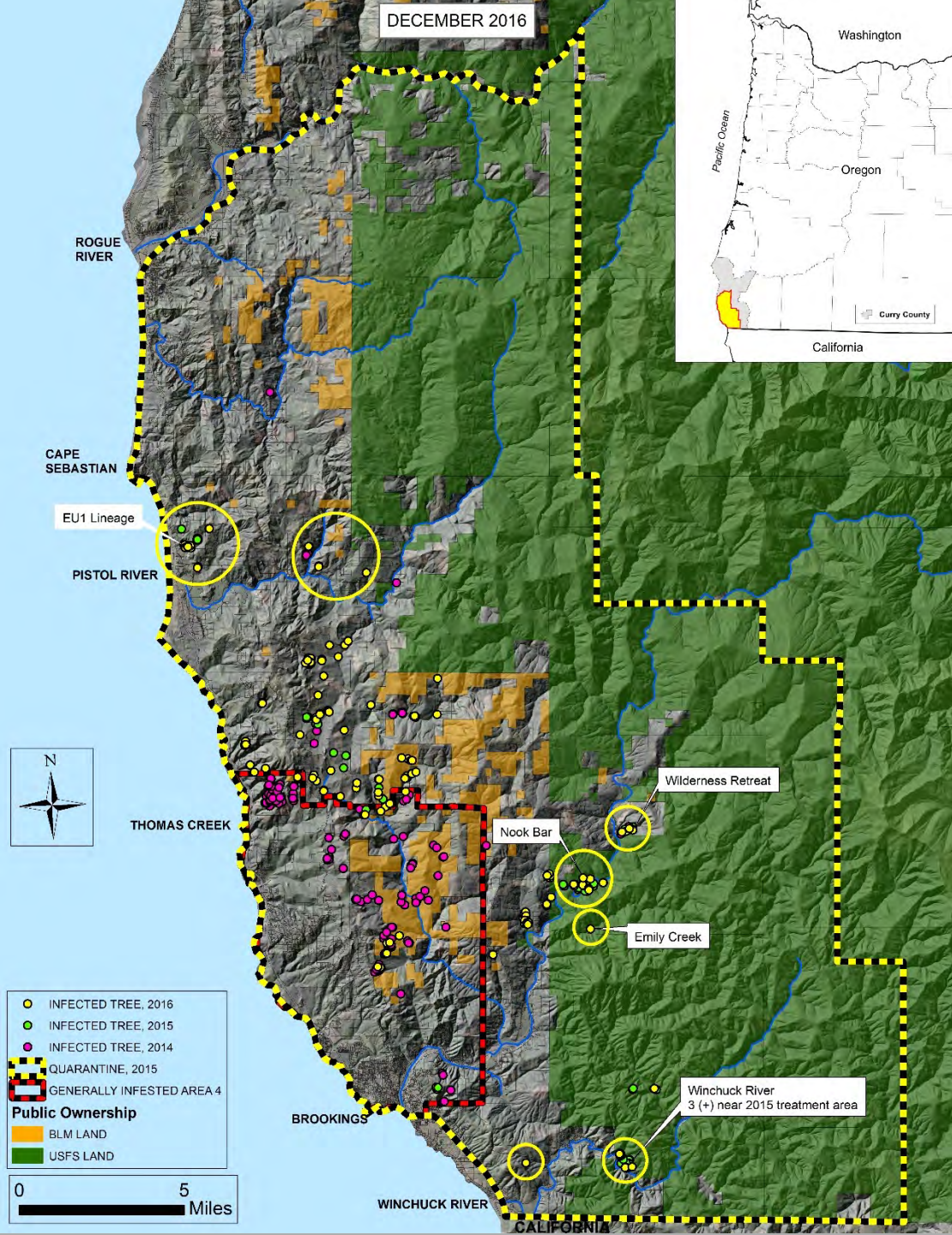
- Eradication of the EU1 infestation while it is still in its early stage of introduction
- Follow up with international colleagues on risk of EU1 to timber and forest resources.
- Treating outlying NA1 sites to keep disease outbreak as small as possible and keep the quarantine at sub-county level
- A deeper dialogue on transitioning to living with the disease that is SOD
- Greater focus on ensuring tanoak conservation, including researching resistance to the pathogen



DECEMBER 2016



QUESTIONS?



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